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Frailty and quality of life of older adults: a study in a rural area

Fragilidad y calidad de vida de los adultos mayores: un estudio en un área rural

Fragilidade e qualidade de vida de idosos: um estudo em área rural

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ABSTRACT: To relate the frailty and the life quality of older adults in a rural area. Cross-sectional and descriptive study using a quantitative method. 30 older adults participated in this investigation. As to the relationship of frailty with the life quality, it was obtained moderate correlation magnitude with statistical significance. The findings reinforce the premise that the level of frailty is influenced by multidimensional factors.
Keywords: Frail older adults; Quality of life; Rural population.

***RESUMEN**: Relacione la fragilidad y la calidad de vida de los ancianos en la vida rural. Este es un estudio transversal, que utiliza un método de investigación cuantitativa. 30 personas mayores participaron en el estudio. En cuanto a la relación entre fragilidad y calidad de vida, se obtuvo una magnitud de correlación moderada con significación estadística. Los resultados refuerzan la premisa de que el nivel de fragilidad está influenciado por factores multidimensionales.*
***Palabras-clave:** Ancianos frágiles; Calidad de vida: Población rural.*

***RESUMO**: Relacionar a fragilidade e a qualidade de vida de idosos em área rural. Trata-se de um estudo transversal e descritivo, utilizando método quantitativo de pesquisa. 30 idosos participaram do estudo. Quanto à relação da fragilidade com a qualidade de vida, obteve-se magnitude de correlação moderada com significância estatística. Os resultados reforçam a premissa de que o nível de fragilidade é influenciado por fatores multidimensionais.*
***Palavras-chave**: Idoso frágil; Qualidade de vida; População rural.*

Introduction

Population aging stimulates discussions about the needs of the older adults who are users of health and social systems, generating concern about the frailty and maintenance of their life quality. The older population has specific needs, coming from clinical-functional and socio-familiar characteristics, thus requiring full attention from the primary care services (Veras, 2015).

Changes in the demographic and epidemiological profile of the population have led to an increase in the number of older adults with chronic diseases, which may compromise their functional capacity (Pilger, Menon, & Aidar, 2013). The decline in functional capacity is associated with the predisposition of frailty and influences the life quality (Carneiro, *et al.*, 2016).

Frailty can be considered multidimensional, heterogeneous and unstable, and understood as a state of vulnerability, involving biological, psychological, social and environmental aspects (Morley, *et al.*, 2013).

Life quality is a construct of different definitions because it is related to cultural, ethical, religious and personal aspects, considering the individual's perception of their position in life and being influenced by internal and external factors (WHOQOL, 1995).

Frailty has become a silent epidemic affecting older people, and this trend is evident in both developed and developing countries (Theou, *et al.*, 2013). The rapid demographic transition, in fact, demands higher expenditures for the older adult public, and this endangers the sustainability of health and social care systems. For these reasons, since the last decade, there has been a growing call for the implementation of preventive actions, considering the possibility of reversal of frailty (Faria, Dias, Molina, Nascimento, & dos Santos Tavares, 2016). Frailty has become a public health problem, considering the impact of this syndrome on life quality, as well as the increase in health services expenses due to adverse events such as falls, delirium, dependence, institutionalization, depression and death (Cesari, Landi, Vellas, Bernabei, & Marzetti, 2014).

A sectional study carried out in Curitiba, Paraná, identified that the frailty is associated to the life quality of the older adult, because the higher the level of frailty, the lower the life quality of these individuals, and for the frail older, the physical dimensions of life quality were the most impaired, whereas the psychosocial dimensions were better evaluated (Lenardt, *et al.*, 2016).

Freitas, Sarges, Moreira e Carneiro (2016) presented that frailty is inversely proportional to the life quality and is significantly associated with the functional capacity of the older adult, being marked by muscular weakness and physical inactivity.

Another prospective cohort study conducted with 382 older adults Koreans living in rural areas in order to analyze the impact of the frailty syndrome on the health of these older people. As a result, 17.4% of the older adults were frail and the frailty had a positive association with life quality. In addition, it increased the risk of functional decline and mortality (Jung, *et al.*, 2016).

There is a growing number of national and international studies that address the relationship between frailty and life quality Chang, 2012). Identifying this relationship is essential to subsidize health services in the planning of actions for the older adult. The early identification of the characteristics that predict frailty allows intervention to improve the life quality of the older adult and avoids adverse events, as well as prevents or delays the progression of frailty.

Older people in rural areas have cultural, social and ethnic peculiarities. They appear to have a healthy lifestyle and greater active behavior, resulting from routine activities. However, it is difficult to access health and social services due to the locomotion and distance of services. Given the context, there is a need to offer greater efficiency in health care to this population (Llano, *et al.*, 2017).

Considering the multiple dimensions of older adult is necessary for the prevention of diseases related to frailty and promotion of life quality. It is opportune to adopt measures to monitor the frailty and life quality in order to minimize the worsening of the health conditions of the older adult. The aim was to relate the frailty and the life quality of older adults in a rural area.

Methods

Cross-section and descriptive study using a quantitative method. 30 older adults residents in a rural area registered in a Centro de Referência de Assistência Social (Reference Center for Social Assistance) of the city of São Carlos, in São Paulo participated in this study. The area was classified of high social vulnerability, which according to the Índice Paulista de Vulnerabilidade Social (Paulista Social Vulnerability Index) characterizes census sectors of the State of São Paulo, considering socioeconomic and demographic dimensions, including socio-economical profile, age of household head, income levels and education (Fundação Sistema Educacional de Análise de Dados, 2018).

We identified 96 older adults enrolled in the service and they were interviewed following inclusion criteria: be a resident of a rural area, be registered in a Centro de Referência de Assistência Social (Reference Center for Social Assistance) and possess comprehension and verbal communication. The exclusion criteria were: have illness and mental problems that, whatever the reason, would prevent the application of questionnaires and the performance of the tests. It was performed data collection which consisted of the access to all existing records on paper in the referral service, in order to identify the number of older adults enrolled. We chose not to perform sample calculations and perform the survey with all registered older adults.

Located the homes of all older people registered, they were visited by researchers through active search, in the period from August to October 2016. All the interviews were conducted in the homes of the older adults. Sixty-five older adults were not interviewed because of: wrong addresses (33), the older adults were not home at the time of visits and revisits (16), death (12), refusal (3) and was not an older adult (2).

Demographic characterization instruments were used, the Edmonton Frailty Scale and Whoqol-old and Whoqol-bref (Fleck, *et al.*, 1999). The questionnaire for the sociodemograph assessment, previously prepared by the researchers contained the following variables: sex, age, ethnicity, educational level, marital status, religion and working condition.

The frailty was evaluated by the Edmonton Frail Scale which consists of nine domains: cognition, functional independence, general state of health, social support, use of medications, nutrition, humor, and functional performance. According to the responses, the final score indicated the condition of frailty in five categories: non-frail, apparently vulnerable, light, moderate or severe frailty (Fabrício-Wehbe, *et al.*, 2009).

To assess the life quality, it was used Whoqol-bref and the Whoqol-old instrument. The Whoqol-bref contains 26 questions related to life quality, health and other areas of life, taking as a reference the two weeks before. The end was assigned a value to the life quality, the physical, psychological and social areas and the environment. The Whoqol-old contains 24 questions about the thoughts, feelings and certain aspects of the life quality of the older adult, and also assigns a value to the areas: sensorial functioning; autonomy; past, present and future activities; social participation; death and dying; intimacy, being 100 points the highest score. The two quality-of-life instruments can vary from 0 to 100 points, and the higher the grade, the better the life quality (Fleck, *et al.*, 1999).

Data analysis were coded and entered into a spreadsheet in Statistical Package for the Social Science (SPSS) version 20.0. They were treated with descriptive statistics and presented in frequency tables, with absolute values and percentages for categorical variables, and with measures of location and dispersion (mean, standard deviation, median, minimum and maximum values) for the continuous variables.

To verify the relationship between numerical variables it was used the Spearman correlation coefficient values of 0 to 1 to indicate correlation.

The magnitude of correlations was verified through the test of Levin and Fox (2014), in which it was adopted the magnitudes (weak) < 0.3, of 0.3 to 0.5 (moderate) and 0.6 to 0.9 (strong). The significance level adopted for statistical tests was 5% ($P \leq 0.05$).

All the ethical precepts that govern research with human beings were observed and respected. The study was approved by the Research Ethics Committee of the Universidade Federal of São Carlos, opinion number 1.505.133, on April 18, 2016, CAAE: 55016716900005504.

Results

The sample of this study consisted of 30 older adults participants, most of them female (70.0%), with an average age equal to 68.2 years (± standard deviation, SD = 6.8) and 70% of them had from 1 to 4 years of study. Most were married (60%), white (56.6%), with active working condition (56.6%). The religion of greater predominance was the catholic (83.3%), it can be observed in **Table 1**. As for the evaluation of frailty, 46.6% of the older adults were not frail, 23.3% were apparently vulnerable and 29.9% showed frailty at some level (light, moderate or severe).

Evaluation of life quality according to Whoqol-bref, showed that the participants had an average of 64.6 points (± SD = 10) and according to Whoqol-old average of 65 points (± SD = 12). In the Whoqol-bref, the psychological domain had the highest average score (68.5, ± 11.2), and the environment domain had the lowest average score (59.6 ± 12.8). As for the application of the Whoqol-old, it is observed that the sensorial functioning domain reached a higher average score (68.7±22.6), and the domain intimacy had the lowest average score (62.2, ±18.3), it can see Table 1.

The relationship of frailty with numeric variables showed weak correlation and non-significance for age and years of schooling. The relationship of the frailty with the life quality, showed negative correlation (r:-0.608) with the Whoqol-bref and statistical significance ($P < 0.001$) and positive correlation with the Whoqol-old (r: 0.517) and statistical significance ($P = 0.003$), both with moderate correlation magnitude.

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The Table 1 presents the data collected

Table 1. Distribution of sociodemographic variables, frailty and life quality of older adults enrolled on Centro de Referência de Assistência Social (Reference Center for Social Assistance)

Variables	Cathegories	n (%)	Average (± standard deviation)	Minimum	Median	Maximum	P-valor	Correlation
Gender	Female	21 (70)						
	Male	9 (30)						
Age (years)			68.2 (6.8)	60	67	89	0.585	0.104
Age	60-69	20 (66.6)						
	70-79	8 (26.6)						
	80-89	2 (6.6)						
Ethnicity	White	17 (56.6)						
	Black	6 (20)						
	Brown	7 (23.3)						
Marital status	Married	18 (60)						
	Widower	9 (30)						
	Single/Separate/Divorced	3 (9.9)						
Religious	Catholic	25 (83.3)						
	Gospel	4 (13.3)						
	None	1 (3.3)						
Working condition	Retired	13 (43.3)						
	Not retired	17 (56.6)						

Years schooling		2.5 (0.89)	1	3	4	0.446	-0.144
	Illiterate	7 (23.3)					
Schooling	1-4 years	22 (73.3)					
	5 years or more	1 (3.3)					
	Non-frail	14 (46.6)					
Level Frailty	Apparently vulnerable	7 (23.3)					
	Frailty	9 (29.8)					
Whoqol-bref	Physical	64.7 (15.6)	21.4	67.8	92.8	0.140	-0.385
	Psychological	68.5 (11.2)	37.5	66.6	95.8	0.761	-0.083
	Social Relation	65,9 (12)	25	66.6	100	0.247	-0.308
	Environment	59.6 (12.8)	25	62.5	100	0.762	-0.82
	Whoqol-bref total	64.6 (10)	38.2	66.3	97.7	<0.001	0.608
Wholqol-old	Sensorial functioning	68.7 (22.6)	25	75	93.7	0.171	-0.360
	Autonomy	63.5 (13.7)	31.2	68.7	93.7	0.720	-0.097
	Present, past, future activities	63.5 (13.7)	31.2	65.6	93.7	0.501	-0.182
	Social Participation	60.8 (16.5)	25	62.5	93.7	0.275	-0.290
	Death and dying	67 (21.6)	25	68.7	100	0.130	-0.395
	Intimacy	62.2 (18.3)	12.5	75	100	0,782	0,075
	Whoqol-old total	65 (12)	32.2	69.2	85.4	0.003	0.517

Discussion

In this study was predominance of the female gender, which corroborates with the phenomenon of the feminization of old age. In fact, compared to men, women are the ones that have higher life expectancy, lower mortality rates from external causes, less exposure to occupational hazards, consume less tobacco and alcohol and use more the health and social services (Storti, Fabrício-Whebe, Kusumota, Rodrigues, & Marques, 2013).

The average age of the participants of this study was 68.2 years, in other words, the young older adult. Studies show that older adults residents of rural areas have shorter life expectancy compared to those living in the urban areas, in general they are poorer, have worse health and housing, major difficulties to access medical services, lower education, increased injury risk related to the environmental and socioeconomic conditions and less access to the media. These factors that added to the clinical aspects related to aging may influence the number of years lived and other aspects of health (Barbosa, Teixeira, Orlandi, Oliveira, & Concone, 2015; Jung, *et al.*, 2016; National Rural Health Alliance (2018).

Most of the older adults evaluated presented low schooling. The literature shows that this fact occurs due to the fact that formal education was not be valued at the time at which these older adults were born and raised. In addition, the socioeconomic situations were precarious, hindering the access of the population to classrooms especially because of the time necessary to cover long distances (National Rural Health Alliance, 2018).

Researchers show the level of education is touted as a factor that represents damage to the health of the older adult. Older people with low schooling may have mental health problems, chronic conditions and give rise to the development of frailty (Gutiérrez-Robledo, & Avila-Funes, 2012).

Andrew e Keefe (2014) show the older adults' socioeconomic status is a broad concept that includes factors such as education, occupation, income and deprivation. The income itself, in most cases, affects the health of those who have limitation of access to services. Another view is that education influences health through lifestyle and behavior, according to individuals, regions and social groups.

As to frailty, 46.6% of the evaluated older adults did not show frailty, and 29.9% showed frailty at some level (light, moderate or severe).

On a study of rural population in the municipality of Cabaceiras, Paraíba, with 40 older adults it identified that 35.9% of respondents did not show frailty. A study in Colombia with 1.692 older adults living in rural areas, through the application of the Phenotype of Fried, obtained prevalence of frailty in 12.2% (Curcio, Henao, & Gomez, 2014).

Another study conducted in Romania evaluated 215 older adults, comparing their lives in urban and rural areas. The older people living in rural areas were six times more likely to be frail in comparison with those living in urban areas (Olaroiu, Ghinescu, Naumov, Brinza, van den Heuvel (2016).

Another study conducted in Australia with 1.501 older adults of rural communities identified that 25% of them were frail according to the rating scale Frailty Index (Dent, *et al.,* 2016). Investigating the frailty of the older adults in rural areas allows the identification of the social and environmental issues that are crucial to the frailty. Analyzing the environment in which the older adults are inserted is to consider existing conditions and social circumstances as risk factors for frailty.[26] There is a need of frailty to be recognized by basic care services instead of being mislabeled as normal aging process (Jung, *et al.,* 2016; Dent, *et al.,* 2016).

In the present study, although most of the older adults have not showed frailty, these results show the cultural, environmental and socioeconomic differences that exist between groups of older adults living in urban and rural areas, with different features, whether physical, psychological or social, which influence the occurrence of frailty, accompanied by physical and functional decline and comorbidities (Confortin, 2016).

In vulnerable regions, characteristic of rural areas, where the population is user of public services, the accessibility is punctual and specific to solve problems, compromising the service to carry out preventive actions (Andrew, & Keefe, 2014). In this sense, frail older people can urge for demands for public policy, which may be highly related to the health of older people and the need for welfare aid.

It is evident that the need for monitoring the frailty as a way of preventing the adverse outcomes, such as falls, hospitalization, institutionalization and death. In addition, the rural areas can restrict access to other social and structural opportunities. It is not just a matter of income, as it also involves the living conditions, no access to education, work, housing quality and safety (Souza, *et al.*, 2015; Gutiérrez-Robledo, & Avila-Funes, 2012).

As to life quality, the lowest scores were assigned to the rural areas with an average of 59.6 points at the Whoqol-bref and social participation domain averaging 60.8 points at the Whoqol-old.

Research conducted with older people in the rural area of Uberaba, Minas Gerais, found the domain environment (63.3) and social participation (68.0) with lower scores assessed (Tavares, Gomes, Dias, & Santos, 2012).

The environment domain covers issues regarding local living satisfaction, health care, participation in community events, which can demonstrate insight and autonomy of older persons in relation to the place where they live (Fleck, *et al.*, 1999).

Participation in daily activities, especially those carried out in the community, may be limiting because the older adult living in rural areas has outlying properties far from the social life, justifying a possible lack of opportunities to participate of community activities (Tavares, Gomes, Dias, & Santos, 2012).

In this study there was an indication of correlation of frailty with life quality assessed according to Whoqol-old, which may show that low satisfaction with the issues related to functional capacity, independence in old age, daily activities, participation in the community and concerns about death may interfere with the level of frailty.

It is emphasized the need for studies that investigate the life quality of the older adult in rural areas, because conditions and determinants of health can interfere with life quality and be close to the frailty and the knowledge of the profile of these older adults, which is fundamental to subsidies actions directed to this population and assist in the management and implementation of interventions and strategies for the prevention of future harms.

As a limitation of the study, the cross-section does not allow clipping to establish causality between the variables. The sample size may limit the generalization of the results, since it met difficulties to access older adults, because of the information file of the users in the data system of the equipment.

It is suggested to carry out new studies with older people in rural areas to check the relationship between frailty and life quality.

Conclusion

In this study the older adults evaluated did not present frailty and their life quality obtained considerable score above 50 points. Frailty correlated with the life quality of participants.

The development of new studies related to frailty is required to offer subsidies to primary systems with regard to the preparation, planning and implementation of interventions.

It is emphasized the importance of integrating the different dimensions of frailty through interventions that are promoted by health care services and assistance to the older adults by multidisciplinary teams, including medical doctors, nurses, gerontologists, social workers, psychologists and others.

There is a need that the attention given to the older adult be centered, considering its peculiarities, so that it intensifies the community service as a way to approach strategy of long-term care, focusing especially on older adults living in rural areas. This process involves orientation and awareness of aspects involving the aging and its consequences.

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